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How far should I go, what should I do ? As in all collecting and restoring hobbies, there is a debate about how original should a restored item be.

Chassis has often been home to the Mice and so there is a lot of corrosion and crap. Best to strip off transformers and coil cans, mask valve sockets and scrub with materials displayed here. When the chassis is clean, paint or protect with materials mentioned in my notes, **Restoration of BoatAnchor radio equipment**

Components

Remove all "Dog Turd" **capacitors** and check even ones that look good with a suitable meter. Best to check Electro Caps with an ESR meter and also a HV meter. If you wish to keep appearance, put modern Electros inside old cans.

Ceramic and Mica Capacitors Used in tuned circuits can be unreliable. Check for value and leakage. Understand the meaning of NPO and make sure any capacitors you use have a suitable voltage rating. Modern "little" ceramics are 50 Volt types.

Check all **resistors** and if they look suspect replace. Some resistors can check out OK but will generate noise when in operation. Best to replace all resistors in Audio stages. Use BIG 2Watt or greater resistors.

Transformers. Check the power transformer in mains operated sets before proceeding with a restoration. Should be checked with a High Voltage Meg Ohm meter for safety. Then check for O/C windings. Also check Output Transformers for being O/C and shorts or leakage to core. Some OP transformers are deliberately HOT. This was done to prevent corrosion of the very thin wire.

When restoring 1930's equipment the power transformer will usually be in very poor shape because the rubber covering on the lead wires will be cracking away or gone altogether. You can try to re insulate these with heat shrink tubing. If the transformer is beyond SAFE repair, replace with one from a scrapped more modern chassis. This may involve removing the electo dynamic speaker.

Coils IF and BC band coils often go O/C or the tuning cap in IF's go open or low value. Can usually salvage coils form a junk chassis.

Valves and valve sockets If you have a valve tester (or can get a friend witgh one to help) check all valves before putting them back. Valve sockets also can cause problems, many were only just good enough when they were made.

Wire The original style cloth covered hook up wire and mains power chord is available from the club shop or from the web. Make sure the power chord is anchored in the chassis and mains wiring to the switches is protected by heat shrink or Cambric tubing.

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Cabinet:

Bakelite cabinets can be repaired quite easily using the material displayed here.

Scrub/soak in Domestos to remove organic material from small cracks. Milton can also be used for this purpose.

Clean the oxide off the surface with Scotch Bright and similar materials, lubricate with Mineral Turpentine and wash with water and detergent to see your progress. DO NOT USE A BUFF, too many good cabinets have been destroyed by a trip to the floor.

When you are satisfied with the finish, use furniture wax to polish the cabinet and to give a lasting finish.

Damaged cabinets Can be repaired with clear Fibreglass Resin and pigment colours. If the repair is large, modelling clay can be used to mould the shape and then back-up the repair with thin metal or Fibreglass cloth – use drink cans.

The resin can be coloured before the hardener is added and the colour checked against a sample until it is correct.

There is a "magic" new material available now intended to repair the extensive plastic work in cars. Cars made since the 1960's have a lot of plastic mouldings and fittings and when these are damaged by age and heat they are usually impossible to replace. **PLASTEX** is a product that has to be seen to believe just how versatile i is in repairing broken or missing plastic mouldings. **Web site: https://plastex.com.au/** There is an SA distributor.

Knobs Can often be repaired with Resin and K and S brass tube. New ones can be cast in Silicon Rubber moulds. Use Resin and Pigment colours to get the colour right. I use a cheap Ultrasonic cleaner and detergent to clean knobs.

Dial glass These can often be obtained as reproductions but if this is not possible then a dial scale can be reproduced on Photo Paper and put behind the pointer instead of on the glass. Some are available through the advertising pages in Radio Waves, an HRSA publication.

Speakers Can often be repaired with contact adhesive or white glue. Advertisers in Radio Waves who will re-cone and rewind. Faulty O/P transformers can be replaced using small 240 to 6 Volt transformers, pull apart and add an air gap.

Grill cloth Can be obtained from suppliers on the Web and through the advertising pages in Radio Waves and via web page searches.

Essential Test equipment: Earth leakage circuit breaker on the bench and an isolation transformer, good modern multi meter, modern soldering iron, solder wick and a Solder Sucker.

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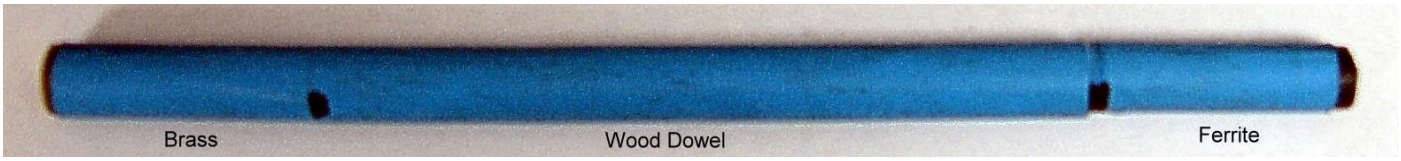
Advisable Test Equipment: High voltage Meg Ohm meter to check transformer safety and to test capacitors, an ESR meter if you wish to reuse some old capacitors. Signal generator and tuning tools, Signal Tracer.

Nice to have Test Equipment: Valve tester, L and C meter - good for checking ceramic caps, Variac to bring chassis up to full power carefully, Capacitor reformer.

Make yourself a tuning wand. This is a piece of wood dowel with a short length of ferrite rod on one end and an equal length of brass rod on the other end. The assembly is held together with heat shrink tube.



Caution:

- **Bigger is not always better, do not replace the Electro Caps with high value modern ones, try to replace with a value that is not more than two times the original value. The valve Rectifier will not live long charging up a BIG capacitor from a cold start.**
- **Do not replace the Valve Rectifiers with modern silicon diodes without taking into account the extra HT that will be available immediately on turn-on.**
- **Be careful of Selenium Rectifiers, if they burn the fumes are dangerous. I replace them just to be safe and sure.**
- **Most old oil filled capacitors can be toxic and these were often used in very early radios and are now leaking.**

Easy projects to make yourself have been featured in magazines and on Web pages over many years. One of the easiest projects you can make is a signal tracer. Look back at old magazines and search the internet for kits for simple test equipment like this.

Silicon chip has featured some useful projects over the past few years. An Electrolytic Capacitor Reformer & Tester was presented in the August and September 2010 editions. Also over the years other projects have appeared in the pages of various magazine, for example Very low value L/C meter and the ESR meter. Sometimes a kit from Ebay may be the cheapest way to go.

Although these notes were written about restoration of old valve (tube) domestic radios, they are just as valid for restoring BoatAnchor Amateur Radio rigs.